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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/960,445	09/21/2001	Kais Gzara	19.0302	5790

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EXAMINER	
HANNAHER, CONSTANTINE	
ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 10/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/960,445	GZARA ET AL.	
	Examiner	Art Unit	
	Constantine Hannaher	2878	

-- The MAILING DATE of this communication appears on th cover sh t with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 October 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *5 and 6* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 7-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-23* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Claims 5 and 6 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 12.

Oath/Declaration

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

The full name of each inventor (family name and at least one given name together with any initial) has not been set forth.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made

in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-4 and 7-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holenka *et al.* (US005473158A) in view of Mathis (US005847384A).

With respect to independent claim 1, Holenka *et al.* discloses a method having all of the recited steps other than the final "comparing" step (see claim 1) applied to the determination of a characteristic of an earth formation rather than a mud mixture. Mathis teaches (column 7, lines 17-21) that an instrument **10** that can determine a characteristic of an earth formation can also be used to determine a characteristic of a mud mixture. In view of the analogous structures of energy source and sensors between the tools of Holenka *et al.* and Mathis, it would have been obvious that the method of Holenka *et al.* could determine a characteristic of a mud mixture surrounding a drilling tool within an inclined borehole in which a drilling tool is conveyed. The method of Holenka *et al.* already establishes at least two segments (and more, see claim 11), and it takes no more than ordinary skill in the art to understand that a mud mixture may be in any segment of the cross-section depending on the rugosity and angle of the inclined borehole. Accordingly, derivation using more than the bottom segment measurements Holenka *et al.* claims for the formation measurement would have been obvious to one of ordinary skill in the art at the time the invention was made. The comparison step would have been obvious to one of ordinary skill in the art to assess heterogeneity of the mud mixture characteristic, in analogy to the formation heterogeneity described by Holenka *et al.* at column 16, lines 21-43. Since a known indication of a characteristic of a mud mixture can be measured elsewhere as described by Mathis (column 7, lines 15-17) that comparison would have been obvious as a check on the validity of the derivation, or as a guide to assess changing conditions underground, and the like.

With respect to dependent claim 2, the number of segments is a choice within the ordinary skill in the art. Holenka *et al.* shows four segments (Fig. **6F**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to derive the indication for as many segments as was considered useful depending on the desired performance.

With respect to dependent claim 3, Holenka *et al.* suggests deriving an indication for each segment in claim 2.

With respect to dependent claim 4, Holenka *et al.* suggests applying an detecting energy in the form of gamma rays in claim 3.

With respect to dependent claim 7, Holenka *et al.* suggests four segments having the recited names in claim 6.

With respect to dependent claim 8, Holenka *et al.* suggests the recited recording step in claim 7.

With respect to dependent claim 9, Holenka *et al.* suggests the recited recording steps in claim 8.

With respect to independent claim 10, Holenka *et al.* discloses a method having all of the recited steps other than the final "comparing" step (see claim 15) applied to the determination of the density of an earth formation rather than that of a mud mixture. Mathis teaches (column 7, lines 17-21) that an instrument **10** that can determine the density of an earth formation can also be used to determine the density of a mud mixture. In view of the analogous structures of energy source and sensors between the tools of Holenka *et al.* and Mathis, it would have been obvious that the method of Holenka *et al.* could determine the density of a mud mixture surrounding a drilling tool within an inclined borehole in which a drilling tool is conveyed. The method of Holenka *et al.* already establishes at least two segments (and more, see claim 18), and it takes no more than ordinary skill in

the art to understand that a mud mixture may be in any segment of the cross-section depending on the rugosity and angle of the inclined borehole. Accordingly, derivation using more than the bottom angular distance measurements Holenka *et al.* claims for the formation measurement would have been obvious to one of ordinary skill in the art at the time the invention was made. The comparison step would have been obvious to one of ordinary skill in the art to assess heterogeneity of the mud mixture density, in analogy to the formation heterogeneity described by Holenka *et al.* at column 16, lines 21-43. Since a known indication of the density of a mud mixture can be measured elsewhere as described by Mathis (column 7, lines 15-17) that comparison would have been obvious as a check on the validity of the determination, or as a guide to assess changing conditions underground, and the like.

With respect to dependent claims 11 and 12, Holenka *et al.* suggests defining other angular distances in claim 18.

With respect to dependent claim 13, Holenka *et al.* suggests the recording step in claim 19.

With respect to dependent claim 14, Holenka *et al.* suggests the use of count rates of hard windows in claim 20.

With respect to independent claim 15, Holenka *et al.* discloses a method having all of the recited steps (see claim 27) applied to the determination of the photoelectric effect of earth formations rather than that of a mud mixture. Mathis teaches (column 7, lines 17-21) that an instrument **10** that can determine a characteristic of an earth formation can also be used to determine a characteristic of a mud mixture. In view of the analogous structures of energy source and sensors between the tools of Holenka *et al.* and Mathis, it would have been obvious that the method of Holenka *et al.* could determine the photoelectric effect of a mud mixture surrounding a drilling tool within an inclined borehole in which a drilling tool is conveyed.

With respect to dependent claim 16, Holenka *et al.* suggests the determining and applying steps in claim 28.

With respect to dependent claim 17, Holenka *et al.* suggests the determining steps in claim 29.

6. Claims 18, 20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holenka *et al.* (US005473158A) and Mathis (US005847384A) as applied to claims 1 and 11 and 15 above, and further in view of Beasley *et al.* (US004495803A).

With respect to dependent claim 18, the problem of cuttings bed buildup is long-known in the art, as shown by Beasley *et al.* Since a cuttings bed occurs in the space of an inclined borehole with the mud mixture, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the measurement signals in the method of Holenka *et al.* applied to the mud mixture as suggested by Mathis were useful to the detection of cuttings bed buildup to the extent that cuttings had a value for the derived characteristic which was different from the value for the characteristic of the mud mixture. The tendency of substances to move to either the upper side of the lower side of the drill string based on density as described by Beasley *et al.* at column 1, lines 36-42 is sufficient for one skilled in the art to appreciate that different values do exist.

With respect to dependent claim 20, the problem of cuttings bed buildup is long-known in the art, as shown by Beasley *et al.* Since a cuttings bed occurs in the space of an inclined borehole with the mud mixture, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the measurement signals in the method of Holenka *et al.* applied to the mud mixture as suggested by Mathis were useful to the detection of cuttings bed buildup to the extent that cuttings had a density which was different from the density of the mud mixture. The tendency of substances to move to either the upper side of the lower side of the drill string based on density

as described by Beasley *et al.* at column 1, lines 36-42 is sufficient for one skilled in the art to appreciate that such a density difference does exist.

With respect to dependent claim 22, the problem of cuttings bed buildup is long-known in the art, as shown by Beasley *et al.* Since a cuttings bed occurs in the space of an inclined borehole with the mud mixture, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the measurement signals in the method of Holenka *et al.* applied to the mud mixture as suggested by Mathis were useful to the detection of cuttings bed buildup to the extent that cuttings had a value for photoelectric effect which was different from the value for the photoelectric effect of the mud mixture. The tendency of substances to move to either the upper side of the lower side of the drill string based on density as described by Beasley *et al.* at column 1, lines 36-42 is sufficient for one skilled in the art to appreciate that different values do exist.

7. Claims 19, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holenka *et al.* (US005473158A) and Mathis (US005847384A) as applied to claims 1 and 11 and 15 above, and further in view of Murphy *et al.* (US004492865A).

With respect to dependent claim 19, the problem of a kick is long-known in the art, as shown by Murphy *et al.* Since a kick occurs in the space of an inclined borehole with the mud mixture, and can be detected using an energy source and sensor analogous to those in the method of Holenka *et al.* as shown by the tool of Murphy *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the measurement signals in the method of Holenka *et al.* applied to the mud mixture as suggested by Mathis were useful to the detection of a kick.

With respect to dependent claim 21, the problem of a kick is long-known in the art, as shown by Murphy *et al.* Since a kick occurs in the space of an inclined borehole with the mud

mixture, and can be detected using an energy source and sensor analogous to those in the method of Holenka *et al.* as shown by the tool of Murphy *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the measurement signals in the method of Holenka *et al.* applied to the mud mixture as suggested by Mathis were useful to the detection of a kick.

With respect to dependent claim 23, the problem of a kick is long-known in the art, as shown by Murphy *et al.* Since a kick occurs in the space of an inclined borehole with the mud mixture, and can be detected using an energy source and sensor analogous to those in the method of Holenka *et al.* as shown by the tool of Murphy *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the measurement signals in the method of Holenka *et al.* applied to the mud mixture as suggested by Mathis were useful to the detection of a kick.

Response to Submission(s)

8. The amendment filed October 6, 2003 has been entered.

9. The reply mentions, but does not respond to, the objection to the declaration. The reply could have been held non-responsive on that basis alone. Note that the indication of pages included in the facsimile transmission on the cover sheet is inadequate.

10. Applicant's arguments filed October 6, 2003 have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800

F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Accordingly, the failure of Mathis to disclose method steps which, as recited, are already a part of the disclosure of Holenka *et al.* cannot be persuasive.

In response to applicant's argument that Holenka *et al.* and Mathis are directed to "wholly different applications", the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, Mathis suggests that the application of energy into a borehole from a source and the recording of measurement signals at a sensor in a tool can derive indications of a characteristic of a formation or a mud mixture equally well. Accordingly, this suggests that the method of Holenka *et al.* may derive an indication of a characteristic of the mud mixture using the same steps as those used to derive an indication of a characteristic of the formation as disclosed.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "the further step of comparing measurements from multiple angular segments with a known mud characteristic or quantity") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Since each of independent claims 1 and 10 plainly recites that the comparing step is with "at least one" of the two recited possibilities, the plain disclosure of Holenka *et al.* of "comparing one signal characteristic of the formation from one angular distance segment to another" (column 16, lines 36-37) is sufficient to make obvious the claim requirement for "comparing said indications of a characteristic of said mud mixture for said

plurality of segments with... each other...." A comparing step of the type argued is not a part of the scope of any of claims 15-17, 22, and 23.

For at least the reasons explained above, Applicant is not entitled to a favorable determination of patentability in view of the arguments submitted October 6, 2003.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Constantine Hannaher whose telephone number is (703) 308-4850. The examiner can normally be reached on Monday-Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (703) 308-4852. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ch

Constantine Hannaher
Primary Examiner